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Attorney Docket No.: 0237.045

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Applicant: Andersson Confirmation No.: 7138
Serial No.: 10/727,732 Group Art Unit: 3572
Filed: December 4, 2003
Title: BALL CHECK VALVE

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- * Certificate of Mailing by First Class Mail (1 Page)
- * Response to Notification of Non-Compliant Appeal Brief and Appellant's Amended Appeal Brief To The Board of Patent Appeals and Interferences (14 Pages)
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Appellant: Andersson
Docket No.: 0237.045

Serial Number 10/727,732
Filing Date: 12/4/2003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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**Response to Notification of Non-Compliant Appeal Brief
and Appellant's Amended Appeal Brief
To the Board of Patent Appeals and Interferences**

Dear Sir:

This communication is being filed in Response to the Notification of Non-Compliant Appeal Brief dated October 23, 2006, and supplements the Brief of Appellant filed on September 6, 2006. The one month due date to file a response is November 23, 2006. Accordingly, this response is timely filed.

This is an appeal from a final rejection, mailed May 16, 2006, rejecting claims 1-6, all the claims being considered in the above-identified application. This Appeal Brief is accompanied by a transmittal letter authorizing the charging of Appellant's deposit account for payment of the requisite fee set forth in 37 C.F.R. §41.20(b)(2).

Appellant's Brief is believed to be in compliance with the requirements set forth in 37 C.F.R. §41.37(c). However, if Appellant's Brief does not comply with the requirements set forth

in 37 C.F.R. §41.37(c), Appellant requests notification of the reasons for non-compliance and the opportunity to file an amended Brief pursuant to 37 C.F.R. §41.37(d).

Real Party In Interest

This application is assigned to Danfoss Flomatic Corporation by virtue of an assignment executed by the inventor on November 23, 2003; and recorded with the United States Patent and Trademark Office at reel 015560, frame 0410, on December 4, 2003. Therefore, the real party in interest is Danfoss Flomatic Corporation.

Related Appeals And Interferences

To the knowledge of the Appellant, Appellant's undersigned legal representative, and the assignee, there are no appeals or interferences, which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status Of Claims

This patent application was filed on December 4, 2003, with the United States Patent and Trademark Office. As filed, the application included 6 claims, of which two were independent. (i.e. claims 1 and 6).

In an initial Office Action dated August 10, 2005, claims 1-3, 5 and 6 were rejected under 35 U.S.C. §102(b) as being anticipated by Clements (U.S. Patent No. 229,094; hereinafter Clements), while claim 4 was rejected under 35 U.S.C. §103(a) as being unpatentable over Clements in view of Watanabe et al. (United States Patent No. 6,267,137; hereinafter Watanabe). In Appellant's Response to First Office Action, claim 1 was amended.

In a second Office Action, which the Patent Office designated as final, mailed December 14, 2005, claims 1-5 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. In Appellant's Response to Final Office Action mailed January 10, 2006, Appellant amended claim 6 and submitted a revised drawing sheet amending Figures 1 and 2.

In a third Office Action dated January 30, 2006, claims 1-6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Werra et al (United States Patent No. 3,105,516; hereinafter Werra) in view of Brehm (United States Patent No. 5,427,352; hereinafter Brehm). In Appellant's Response to Office Action mailed April 25, 2006, no claims were amended.

In a final Office Action dated May 16, 2006, claims 1-6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Werra in view of Brehm.

A Notice of Appeal to the Board of Patent Appeals and Interferences was mailed on July 11, 2006. The status of the claims is therefore as follows:

Claims allowed – none;

Claims objected to – none;

Claims rejected – 1-6; and

Claims canceled – none.

Appellant is appealing the rejection of claims 1-6.

Status Of Amendments

Appellant proffered no amendments responsive to the final Office Action dated May 16, 2006. The claims as set forth in the Claims Appendix include all prior entered claim amendments.

Summary Of Claimed Matter

In one aspect of the invention, as recited in claim 1, a ball check valve (e.g. [0014]) includes a housing having walls defining a fluid inlet (e.g. 102, FIGS. 1-2, [0014]), a fluid outlet (e.g. 104, FIGS. 1-2, [0014]), and a chamber (e.g. 106, FIGS. 1-2, [0014]) communicating with the inlet (e.g. 102, FIGS. 1-2, [0014]) and with the outlet (e.g. 104, FIGS. 1-2, [0014]). The chamber (e.g. 106, FIGS. 1-2, [0014]) includes a fluid passageway (e.g. [0014]). The ball check valve also includes a spherical hollow ball (e.g. 300, FIGS. 1-3, [0016]) in the chamber (e.g. 106, FIGS. 1-2, [0014]) having a diametric cross-sectional area larger than the area of the inlet (e.g. 102, FIG. 1-2, [0014]). The spherical hollow ball (e.g. 300, FIGS. 1-2, [0016-21]) is movable between a first, flow impeding position adjacent the inlet along a guide part (e.g. 200, FIG. 1-2, [0014]) to a second position spaced from the inlet and diverged from the fluid passageway (e.g. [0014]) to allow fluid to pass through the valve. A plurality of spherical shock absorbing members (e.g. 304, FIGS. 1-3, [0020]) are contained within the spherical hollow ball (e.g. 300, FIGS. 1-3, [0020]).

In a further aspect of the invention, Appellant claims that spherical shock absorbing members (e.g. 304, FIGS. 1-3, [0020]) stabilize the spherical hollow ball (e.g. 300, FIGS. 1-3,

[0020]) while in transition between the first, flow impeding position and the second position (e.g. claim 2). In yet another aspect of the invention, Appellant claims that the plurality of spherical shock absorbing members (e.g. 304, FIGS. 1-2, [0018]) are metallic (e.g. claim 3, [0018]). In yet another aspect of the invention, Appellant claims that the spherical hollow ball (e.g. 300, FIGS. 1-2, [0016]) is a metallic sphere enclosed by a coat of rubber or synthetic resin. (e.g. claim 4). In yet another aspect of the invention, Appellant claims that the plurality of spherical shock absorbing members (e.g. 304, FIGS. 1-3, [0016]) only partially fill (e.g. claim 5, [0016]) the spherical hollow ball (e.g. 300, FIGS 1-3).

In a further embodiment of the invention, as recited in claim 6, Appellant claims a spherical ball (e.g. 300, FIGS 1-3) for use in ball check valves (e.g. FIGS 1-2). The spherical ball (e.g. 300, FIGS 1-3) defines a hollow cavity with a plurality of spherical shock absorbing members (e.g. 304, FIGS 1-3) disposed therein. The plurality of spherical shock absorbing members (e.g. 304, FIGS 1-3) stabilize the spherical hollow ball (e.g. 300, FIGS 1-3) during operation of the ball check valve as the spherical hollow ball moves between a first, flow impeding position (e.g. [0015]) adjacent an inlet to the ball check valve along a guide part (e.g. 200, FIGS 1-3) to a second position (e.g. [0015]) spaced from the inlet and diverged from a fluid passageway formed by a housing (e.g. 0014]) of the ball check valve to allow fluid to pass through the ball check valve.

Grounds Of Rejection To Be Reviewed On Appeal

1. Whether claims 1-5 are obvious under 35 U.S.C. §103(a) to one of ordinary skill in the art by Werra in view of Brehm.

2. Whether claim 6 is obvious under 35 U.S.C. §103(a) to one of ordinary skill in the art by Werra in view of Brehm.

Argument

I. Rejection of Claims 1-6 under 35 U.S.C. 103(a) over U.S. Patent No. 3,105,516 to Werra in view of United States Patent No. 5,427,352 to Brehm

Reversal of the rejection to claims 1-6 as obvious over Werra in view of Brehm is respectfully requested.

Appellant requests reconsideration and withdrawal of the obviousness rejection on the ground: (1) that the documents themselves lack any teaching, suggestion or incentive for their further modification as necessary to achieve Appellant's recited invention.

A. Claims 1-5 Are Patentable Over Werra in view of Brehm

(1) Office Actions Improperly Combines the Teachings of Werra and Brehm

In claim 1, Appellant claims a ball check valve comprising a housing having walls defining a fluid inlet, a fluid outlet and a chamber communicating with the inlet and with the outlet. The ball check valve includes a spherical hollow ball in the chamber having a diametric cross-sectional area larger than the area of the inlet. A plurality of shock absorbing members is contained within the spherical hollow ball. The ball is movable between a first, flow impeding position adjacent the inlet along a guide part to a second position spaced from the inlet and diverged from the fluid passageway to allow fluid to pass through the valve.

Applicant recognized that the use of a spherical hollow ball filled with a plurality of spherical shock absorbing members reduces the physical shock and hydrodynamic forces from the flow of fluid subjected to the ball during closing or high velocity flow in a ball check valve.

The noise caused by hydraulic shock waves and damage to the interior of the valve using a solid spherical ball in a ball check valve are also reduced by using a spherical hollow ball filled with a plurality of spherical shock absorbing members in accordance with the principles of the present invention.

There is no suggestion or motivation for combining the Werra with the Brehm in the final Office Action. "Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art." M.P.E.P. §2143.01. The Office merely points to the purported disclosure of certain individual elements in each reference and then, without more, concludes that "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the shock absorbing members that are in the valve of Brehm into the hollow ball of Werra et al., in order to dampen the movement of the ball." This is insufficient. See In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a prima facie case of obviousness was held to be improper.).

The final Office Action admits that Werra does not disclose a plurality of spherical shock absorbing members contained within the spherical hollow ball. Instead, the Office alleges that Brehm discloses a plurality of spherical shock absorbing members 73 contained within a valve body (Brehm, col. 5, lines 7-51). The Office alleges that it would have been obvious to one skilled in the art at the time the invention was made to utilize the shock absorbing members that

are in the valve of Brehm into the hollow ball or Werra in order to dampen the movement of the ball.

Werra is directed to a ball check valve using a hollow ball. As the Office Action correctly points out, Werra does not disclose a plurality of spherical shock absorbing members contained within a spherical hollow ball. However, Werra also discloses its own solution to the problem addressed by applicant's invention. Specifically, Werra states:

[T]he "moving liquid in the spaces 24 and 25 creates a cushion which limits the upward movement of the ball and prevents it, with normal flow velocity, from hitting the cap 15 and bobbling back and forth against it so as to create noise and objectionable turbulences. (Col. 2, lines 65-70)

Therefore, Werra fails to recognize the need for an alternative ball design to, for example, reduce noise, physical shock forces or damage to the interior of the check valve.

In contrast, Brehm is directed to a completely different type of valve, specifically an electromagnetic valve. In particular, the electromagnetic valve that is the subject of Brehm is used as a pressurized medium regulating valve for an automatic transmission of a motor vehicle. The electromagnetic valve disclosed in Brehm has a magnetic housing, an electromagnetic coil received in the magnetic housing and a plurality of movable parts including a moveable magnetic armature and a movable valve stem device for valve opening and closing. Abst. To provide a damping of the motion of the movable parts, at least one of the moveable parts is provided with a hollow compartment and a damping mass at least partially fills the hollow compartment. Brehm Patent, Col. 5, lines 18-26.

However, the electromagnetic valve of Brehm is not controlled or operated by fluid and, thus, does not discuss or consider the physical shock and hydrodynamic forces from the flow of fluid subjected to a ball during closing or high velocity flow in a ball check valve. Instead, the

electromagnetic valve of the Brehm Patent is controlled by the flow of current and focuses on achieving a “nearly constant valve characteristic curve and uniform dynamics” to draw the armature disk toward the coil against the action of the coil spring. The operation of the electromagnetic valve of Brehm is, therefore, completely different than the operation of the ball check valve disclosed in Werra and in the present invention. Therefore, there is no motivation or suggestion to combine Werra with Brehm and any combination of individual features of the same is based solely hindsight impermissibly using Applicant’s invention as a guide.

Thus, because there would be no reason to combine Brehm with Werra, this claim is not obvious over these references and believed to be allowable. Claims 2-5 are believed to be allowable for the same reasons as claim 1 and for the additional features recited therein.

B. Claim 6 Is Patentable Over Werra in view of Brehm

Claim 6 recites, inter alia, a spherical ball for use in ball check valves. The spherical ball defines a hollow cavity with a plurality of spherical shock absorbing members disposed therein. The plurality of spherical shock absorbing members stabilize the spherical hollow ball during operation of the ball check valve as the spherical hollow ball moves between a first, flow impending position adjacent an inlet to the ball check valve along a guide part to a second position spaced from the inlet and diverged from a fluid passageway formed by a housing of the ball check valve to allow fluid to pass through the ball check valve.

For the reasons stated above, there is no motivation or suggestion to combine the spherical balls used in the electromagnetic valve disclosed in Brehm with the hollow spherical ball used in a completely different valve disclosed in Werra to result in the spherical ball recited in claim 6.

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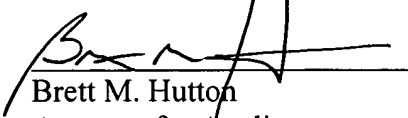
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Conclusion

Appellant respectfully request reversal of the 35 U.S.C. §103(a) rejection of claims 1-6 based on Werra in view of Brehm. Appellant submits that there is no motivation, teaching or suggestion to combine these references. Accordingly, reversal of the rejection is respectfully requested.

Dated: October 30, 2006

Respectfully submitted,


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Claims Appendix

1. A ball check valve comprising:
 - a housing having walls defining a fluid inlet, a fluid outlet, and a chamber communicating with the inlet and with the outlet, the chamber including a fluid passageway;
 - a spherical hollow ball in said chamber having a diametric cross-sectional area larger than the area of the inlet, said spherical hollow ball being movable between a first, flow impeding position adjacent the inlet along a guide part to a second position spaced from the inlet and diverged from the fluid passageway to allow fluid to pass through the valve; and
 - a plurality of spherical shock absorbing members contained within said spherical hollow ball.
2. The ball check valve of claim 1, wherein the spherical shock absorbing members stabilize the spherical hollow ball while in transition between the first, flow impeding position and the second position.
3. The ball check valve of claim 1, wherein the plurality of spherical shock absorbing members are metallic.
4. The ball check valve of claim 1, wherein said spherical hollow ball is a metallic sphere enclosed by a coat of rubber or synthetic resin.
5. The ball check valve of claim 1, wherein the plurality of spherical shock absorbing members only partially fill said spherical hollow ball.

6. A spherical ball for use in ball check valves, said spherical ball defining a hollow cavity with a plurality of spherical shock absorbing members disposed therein, wherein the plurality of spherical shock absorbing members stabilize the spherical hollow ball during operation of the ball check valve as the spherical hollow ball moves between a first, flow impending position adjacent an inlet to the ball check valve along a guide part to a second position spaced from the inlet and diverged from a fluid passageway formed by a housing of the ball check valve to allow fluid to pass through the ball check valve.

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Evidence Appendix

None.

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Related Proceedings Appendix

None.